Name: Date:

Polynomial Factoring solution (version 38)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 4x + 28 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(4) \pm \sqrt{(4)^2 - 4(1)(28)}}{2(1)}$$

$$x = \frac{-(4) \pm \sqrt{16 - 112}}{2(1)}$$

$$x = \frac{-4 \pm \sqrt{-96}}{2}$$

$$x = \frac{-4 \pm \sqrt{-16 \cdot 6}}{2}$$

$$x = \frac{-4 \pm 4\sqrt{6}\, i}{2}$$

$$x = -2 \pm 2\sqrt{6}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-9 + 8i$ and $-2 - 6i$ in standard form $(a + bi)$.**

Solution

$$(-9 + 8i) \cdot (-2 - 6i)$$

$$18 + 54i - 16i - 48i^2$$

$$18 + 54i - 16i + 48$$

$$18 + 48 + 54i - 16i$$

$$66 + 38i$$

Polynomial Factoring solution (version 38)

3. **Write function $f(x) = x^3 - 8x^2 + 17x - 10$ in factored form. I'll give you a hint: one factor is $(x - 5)$.**

Solution

	1	-8	17	-10
5		5	-15	10
	1	-3	2	0

$$f(x) = (x-5)(x^2 - 3x + 2)$$

$$f(x) = (x-5)(x-1)(x-2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+5)^2 \cdot (x+1) \cdot (x-2)^2 \cdot (x-6)$$

Sketch a graph of polynomial $y = p(x)$.